



Independent Monitor

McArthur River Mine Annual Report Card 2023

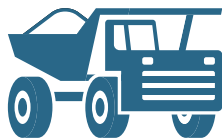
Independent monitoring and reporting on data from 1 May 2022 to 30 April 2023

Advisian
Worley Group

About the Independent Monitor

The Independent Monitor is an expert hired by the Northern Territory (NT) government to do a check (or an 'audit') to find out how well McArthur River Mining is looking after the environment. The last audit was done in 2022 and now the Independent Monitor has completed the audit for 2023. The 2023 audit covered the time between 1 May 2022 and 30 April 2023.

During the audit the Independent Monitor checked:



McArthur River Mining

(the Mine Operator)



The Government

(NT Department of Industry, Tourism and Trade or 'the Department')



The outcomes of the audit were written into a report called the Annual Environmental Performance Audit Report (audit report) 2023. This Annual Report Card is a summary of the main findings of the audit report 2023.

The Independent Monitor did an audit to check how well McArthur River Mining and the government met the rules (called conditions) that are listed in McArthur River Mining's:

- ▶ **Mining Authorisation (approval)**
- ▶ **Waste Discharge Licence.**

The Independent Monitor also looked at other things that guide the environmental management of the mine, including:

- ▶ Recommendations made by the NT Environment Protection Authority (called the NT EPA recommendations)
- ▶ McArthur River Mining's voluntary environmental commitments
- ▶ The Department's approach to applying the environmental rules to the mine
- ▶ The health of the McArthur River near and downstream of the mine.

During the audit the Independent Monitor gathered information in a couple of ways:



- 1. By looking at the documents that describe the ways McArthur River Mining and the government are managing things.**

For example, for the mine this was things like water quality monitoring information, for the government this was things like a report on the mine's activities.



- 2. By asking people that work at the mine and the government questions about the mine's activities.**

This included interviews and phone calls.

For illustrative purposes only (not to scale)

Key

- Mining Lease Area
- Haul route

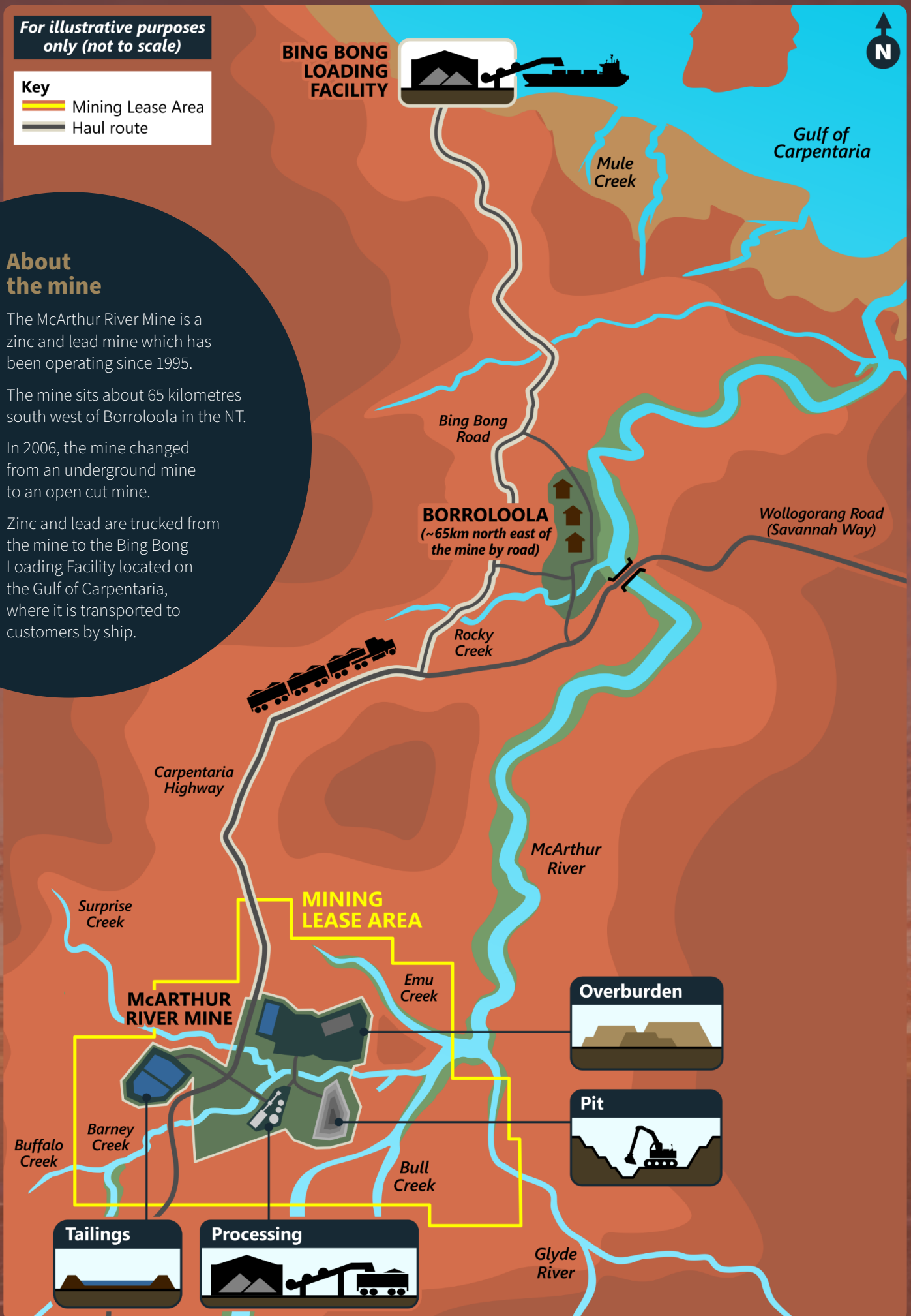
About the mine

The McArthur River Mine is a zinc and lead mine which has been operating since 1995.

The mine sits about 65 kilometres south west of Borroloola in the NT.

In 2006, the mine changed from an underground mine to an open cut mine.

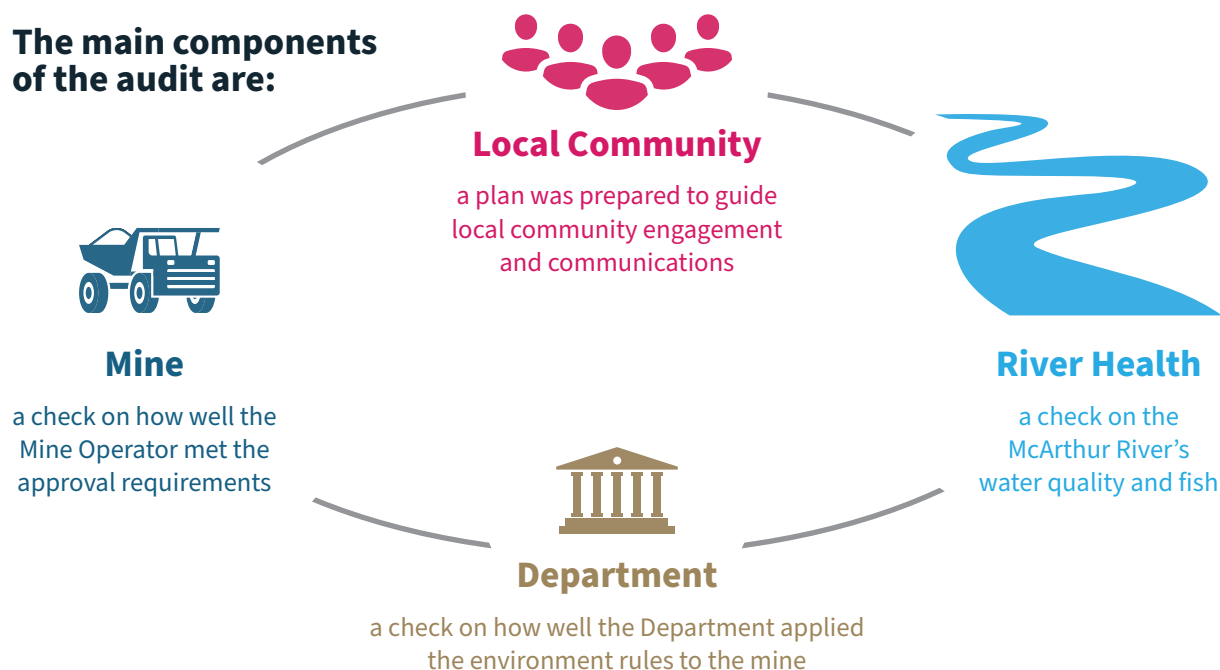
Zinc and lead are trucked from the mine to the Bing Bong Loading Facility located on the Gulf of Carpentaria, where it is transported to customers by ship.



The audit process

The Independent Monitor audit process reviews the environmental performance of the Mine Operator and the Department in protecting the health of the McArthur River. The Independent Monitor's audit findings are communicated to the Minister, the local community and the public.

The main components of the audit are:



How are the findings measured?

To check how well McArthur River Mining followed the rules (conditions) of the Mining Authorisation (approval), Waste Discharge Licence and NT EPA recommendations, the Independent Monitor used a scoring system with a scale of 0 to 4 to score how well the rules were followed.

A score was given to each condition and recommendation, reflecting how well the rules were followed, and then the scores were added up and overall percentages (%) were worked out.

Scoring system



Qualitative check

The Independent Monitor also qualitatively assessed (that is - checked without giving a score) the following:

- ✓ McArthur River Mining's environmental commitments

- ✓ The Department's approach to applying environmental rules to the mine
- ✓ Overall health of the McArthur River.

The Independent Monitor did not score these other things, but they did consider how well they had been done.



What did people say about the last audit findings?

How were people consulted?

In October 2022, the Independent Monitor spoke to people who live in Borroloola and outstations at Robinson River, Wandangula (Police Lagoon), Goolminyini (Devil Spring) and Minyalini (Campbell Spring), to explain what the Independent Monitor does and to give the results of the 2022 audit. Outstations were included in the engagement program in response to feedback from the previous engagement, to better include stakeholders unable to travel into Borroloola.

What was talked about?

Engagement focused on the following main points regarding the Independent Monitor's role and the 2022 audit report findings:

- ▶ Health of the McArthur River and its fish
- ▶ General findings of the 2022 audit
- ▶ Creating more opportunities for local involvement in environmental monitoring and land management.

What were the key outcomes of the engagement on the 2022 audit report?

During the consultation, community members were given the results of the 2022 audit report. The key outcomes of engagement with the local community were:

- ▶ Most interested in the health of fish in the McArthur River and whether the fish, and other animals which drink from the river such as cattle, were safe to eat
- ▶ Indicated an interest in the mine creating more opportunities for local people to be involved in environmental monitoring and land management activities
- ▶ Expressed an interest in directly engaging with McArthur River Mining through community events and activities
- ▶ Suggested the engagement process be expanded to include direct engagement with local Aboriginal corporations.



Face-to-face consultation

36 stakeholders were spoken to in person in October 2022



Annual Report Card

People were given a copy of the Annual Report Card and copies were left at key locations in the community

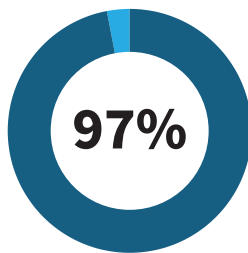


The Mine Operator

Main findings

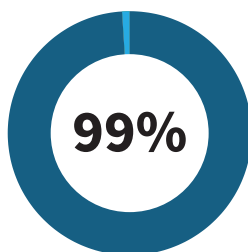
The environmental performance of McArthur River Mining was worked out by checking how well they met the rules of the Mining Authorisation and Waste Discharge Licence and other environmental commitments and recommendations.

The Independent Monitor found that McArthur River Mining met most of the conditions of the Mining Authorisation and the Waste Discharge Licence. The scores given for how well McArthur River Mining followed the rules are shown below.



Mining Authorisation compliance

- ▶ The audit looked at 259 Mining Authorisation conditions
- ▶ The Mine Operator overall met 97% of the Mining Authorisation conditions
- ▶ 235 conditions were fully met and 24 conditions were partly met as it missed a small number of parts of the condition.



Waste Discharge Licence compliance

- ▶ The audit looked at 86 Waste Discharge Licence conditions
- ▶ The audit found the Mine Operator had a high level of overall compliance with the Waste Discharge Licence conditions at 99%
- ▶ 85 conditions were fully met and 1 condition was partly met as it missed a small number of parts of the condition.

Surface Water Review

McArthur River Mining operates dams to manage water treatment and water supply for mineral processing. Comprehensive water procedures exist to control water quality which is checked by a large monitoring program.

The water management system avoids dams overtopping and manages water treatment and transfer between dams. Dam levels are checked every day by the mine. McArthur River Mining balances the water volume between the wet and dry season to have enough water for mineral processing. There were no releases of mine water to any creeks or the McArthur River in 2022/2023.

A new water treatment plant is planned to be built in 2024 to treat mineral processing water.

Air Quality Review

The Air Quality Management Plan, including the air monitoring program can properly manage potential air emissions, particularly sulphur dioxide (SO₂).

The Mine Operator continues to explore ways to reduce dust levels, such as trialling a new dust suppression binder for use in watering haul roads.

In recent years, better management of the Northern Overburden Emplacement Facility has significantly reduced SO₂ emissions from waste rock handling.

The mine continues to improve air quality management.

Voluntary environmental commitments

McArthur River Mining has voluntarily committed to doing a list of things to improve the way the environment is looked after. These voluntary environmental commitments are written down in different documents - Mine Management Plans (MMPs) and the Environmental Monitoring Reports (EMR).

Most of McArthur River Mining's commitments are met, with only 6 out of 158 ongoing commitments not fully addressed. There were improvements from last year's audit, but the Mine Operator could benefit from improved commitments tracking and reporting.

The Mine Operator

A deeper look at the findings

To better understand McArthur River Mining's environmental performance, the compliance scores for conditions of the mine's approvals were matched against the mining areas (Operator domains) and the parts of the environment (Environmental aspects) that they relate to.

Mining activity areas (Operator domains)

As part of the audit, the mine was divided into 'domains' which represent the mine's key activity areas, plus an extra area called Governance/General which is about the mine's overall environmental management. The compliance scores for these areas are shown in the graph below.

The two areas of the mine's activity that are seen to have the highest potential environmental risk, if not managed properly, are the:

Tailings Storage Facility, where leftover material from the mine processing is stored.

The Tailings Storage Facility scored **94%** compliance

Overburden Emplacement Facilities, where waste rock is stored

The Overburden Emplacement Facilities scored **97%** compliance

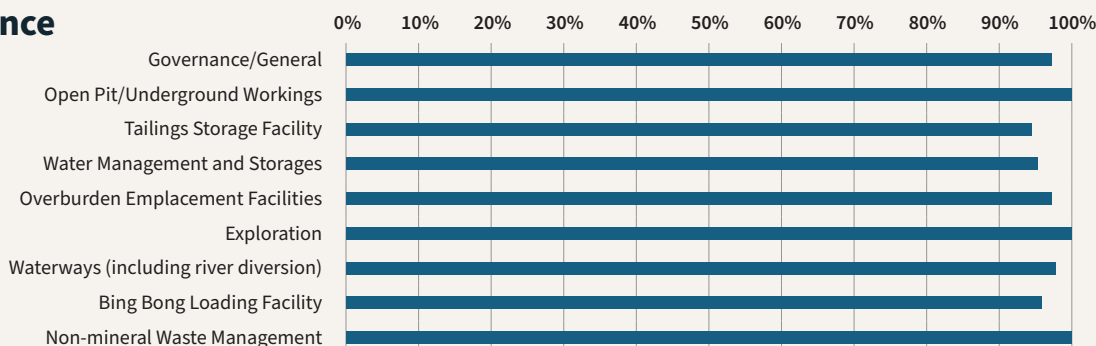
The Department has put the highest number of rules (Mining Authorisation conditions) on these domains because these activities are seen to have the highest chance of harming the environment if not managed properly.

While the score for the Tailings Storage Facility domain is an improvement on last year's score (an increase from 93% to 94%), there were several part compliance scores.

The key reasons for the part compliances were:

- ▶ The design change for the Tailings Storage Facility extra wall work was approved by the engineer but there was no formal review response from the Independent Tailings Review Board
- ▶ Tailings Storage Facility construction reports were late being prepared.

Compliance Level by Domain

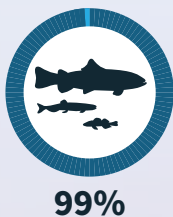


The Mine Operator

A deeper look at the findings

Environmental aspects

Environmental aspects are the parts of the environment that may be impacted by the mine's operations. The audit checked how well McArthur River Mining met the rules of the Mining Authorisation that link to each of the environmental aspects. Overall, compliance levels were high with all environmental aspects scoring above 97%.



Aquatic ecology

To improve this score McArthur River Mining needs to include some more information on metals monitoring.

99%



Marine water

McArthur River Mining met all the rules for marine water.

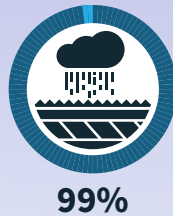
100%



Vegetation and rehabilitation

McArthur River Mining met all the rules for vegetation and rehabilitation.

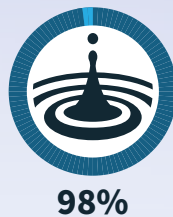
100%



Groundwater

To improve this score, McArthur River Mining needs to include more detail in the Water Management Plan about how groundwater moves.

99%



Surface water

To improve this score, McArthur River Mining needs to make sure permanent gauging stations are installed on Emu River and Glyde River.

98%



Waste management

To improve this score, McArthur River Mining needs to show that the Northern Overburden Emplacement Facility construction hold points are approved and prepare the Tailings Storage Facility construction reports on time.

97%



Monitoring and reporting

To improve this score, McArthur River Mining needs to submit the construction reports soon after construction finishes.

97%



Air quality

McArthur River Mining met all the rules for air quality.

100%



Community

McArthur River Mining met all the rules for community.

100%

The Mine Operator

Key successes and opportunities for improvement

The key areas identified by the audit where McArthur River Mining did well to improve environmental performance, include:



McArthur River Diversion Channel Vegetation Rehabilitation

Over 900,000 tubestock have been successfully planted since 2010 and a total of 120,000 have been planted in 2022/2023. 80% of the seeds used for revegetation is collected onsite.



McArthur River Diversion Channel Woody Debris

Placement of large tree branches within the McArthur River diversion channel has improved habitat for freshwater animals.



Water Quality Monitoring Indigenous Participation

McArthur River Mining has created opportunities for Indigenous Rangers to be involved in monitoring water quality in the McArthur River.



Water Management Dam Upgrade

Raising the dam wall and spillway heights has increased storage capacity allowing for greater flexibility for onsite water reuse.

Key opportunities for Improvement

The audit found that McArthur River Mining could do the following key things to help improve its environmental performance:

Mining Authorisation

- ▶ Prepare annual 'as constructed' reports for the Northern Overburden Emplacement Facility
- ▶ Submit construction reports for the Tailings Storage Facility to the Department in accordance with the timeframes in the conditions
- ▶ Ensure the Independent Certifying Engineer prepares regular construction reports checking the Northern Overburden Emplacement Facility design and construction work have been completed correctly
- ▶ Give Northern Overburden Emplacement Facility construction documentation to the Independent Certifying Engineer for design and construction sign-off
- ▶ Make sure the Independent Tailings Review Board is asked to review and approve any changes to how the Tailings Storage Facility is built and used.

Waste Discharge Licence

The audit assessed the Mine Operator as having a very high (99%) level of overall compliance with the Waste Discharge Licence conditions. The Mine Operator has progressively improved Waste Discharge Licence compliance over the past four years to a stage where there are no further opportunities for improvement identified.

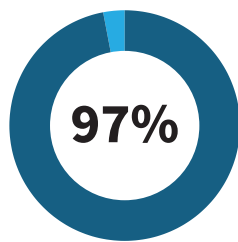
The Department

Main findings

The environmental performance of the Department was assessed by checking how well the Department had:

- ▶ Followed up relevant conditions of the Mining Authorisation
- ▶ Included NT EPA recommendations as Mining Authorisation conditions
- ▶ Followed their own procedures for regulating McArthur River Mining.

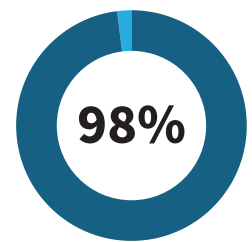
The findings are listed below.



Mining Authorisation compliance

- ▶ The audit looked at 149 Mining Authorisation conditions
- ▶ The Department scored a high level of overall compliance of 97%
- ▶ 132 conditions were fully met and 17 conditions were partly met as they missed a small number of parts of the condition.

NT EPA Recommendations



- ▶ The audit looked at 116 NT EPA recommendations
- ▶ The Department was given a high overall compliance score of 98%
- ▶ 105 conditions were fully met and 11 conditions were partly met as they missed a small number of parts of the condition.

Regulatory procedures and approach

The review looked at how well the Department managed the:

- ▶ Assessment of reports and visits to the mine
- ▶ Environmental monitoring to check the Mine Operator's data
- ▶ Department's regulatory strategy for the mine
- ▶ Establishment of the Community Reference Group

The review found additional opportunities where the Department could be more efficient in how they manage regular activities, such as the annual Environmental Mining Report review.

Key achievements for the Department during the audit period included:

- ▶ The Minister's appointment of an Independent Chairperson for the Community Reference Group in March 2023
- ▶ Updating Authorisation conditions to make the rules clearer
- ▶ Checking groundwater quality at some water bores.



The Department

Main findings

To better understand how well the Department applied the rules of the Mining Authorisation, the rules were divided into seven sections. These sections and their compliance scores are shown in the table below:

Section	Compliance score
General	95%
Adaptive Management	100%
Waste Rock Management	100%
Tailings Storage Facility	93%
Environmental and Independent Monitoring	100%
Overburden Management Project	95%
Mine Closure	100%

The Tailings Storage Facility is an area of high potential environmental risk, if not managed properly. The 93% compliance score for this area was lower than last year. The lower score is due to:

- ▶ The Department's limited involvement in monitoring and review of the activities of the Independent Tailings Review Board
- ▶ The need for the Department to review Tailings Storage Facility quarterly reports and notify the Mine Operator when the reports are accepted.

The *General* section scored 95%, as the Department did not follow up on deliverables that were not received by the Mine Operator, or review documents (e.g. Management Plans) to always provide timely feedback and departmental approval where required.

The *Overburden Management Project* scored 95% which was 2% higher than the 2022 audit period. To improve this score the Department needs to establish the Independent Panels as soon as practical in 2024.

Following the 2023 audit period, the Department has added a requirement to the Authorisation for the Mine Operator to annually provide a list of 'as constructed' reports to be prepared and submitted to the Department each year to support a more timely review process.



The Department

Key successes and opportunities for improvement

Key successes

The audit identified areas where the Department did well to improve environmental performance. These areas include:



Continued strong focus on key mining activities that could be high risk if adequate risk controls were not in place.



Continued practical approach to regulating mining.



Rewording the Authorisation to make it easier to follow the rules.



Regular communication between the Department and McArthur River Mining for a good working relationship to solve potential problems early.



Appointment of an Independent Chairperson for the Community Reference Group.

Continued improved environmental performance and high levels of regulatory compliance by McArthur River Mining have been supported by the practical actions of the Department.

Key opportunities for improvement

The audit identified key things the Department could do to help improve its regulatory activities related to the Mine Operator's environmental performance. These were:

- ▶ Make clear in the Mining Authorisation the required 'as constructed' reports for dams, waste rock and Tailings Storage Facility
- ▶ Improve the response timeframe for the review and approval of documents submitted by the Mine Operator

- ▶ Set up the Independent Panels for the Northern Overburden Emplacement Facility and Tailings Storage Facility
- ▶ Liaise with the Mine Operator to streamline review processes for the Independent Tailings Review Board.

It is important to note these are suggestions only and are not new rules that the Department need to follow.



River Health

McArthur River Mining uses lots of ways to protect the health of the McArthur River so that people can keep using the river. McArthur River Mining has programs in place to check and manage potential impacts of mining on river health.

The Independent Monitor assessed the condition of the McArthur River system using river and fish monitoring information provided by McArthur River Mining and with a site visit. Overall, it was found the McArthur River system was still in good health.

Monitoring results for the reporting period found some elevated metal levels in sediments in Barney Creek and Surprise Creek near to the mineral processing facilities. These results were similar to the 2021-2022 audit period.


The Mine Operator has removed some sediment from Barney Creek to protect the downstream environment. Sediment testing shows reductions in metal levels compared to those in 2018.

The community has no access to these creek areas at the mine site. These creeks do not flow in the dry season and there is negligible risk to the community.

There were no exceedances of permitted metal levels in any fish samples this year. Data collected for the 2022-2023 monitoring program found that fish caught throughout the McArthur River catchment, including barramundi and sooty grunter, are still safe to eat.

Metal levels in sediment and fish will need ongoing checking and management in line with what the mine is already doing to continue to protect the river and the community.

The monitoring data collected suggests that works done to make the McArthur River diversion channel more like natural river channels by planting river plants and placing woody debris (tree branches etc.) in the river, has improved the river habitat for the animals that live in the river.



The
McArthur
River system
was still in good
health and the
fish were safe
to eat.

Comparison of results

River Health

The Mine Operator continues to keep up the health of the river system in the mine area and downstream.

There was no change in the river system health from 2022. The river monitoring showed:

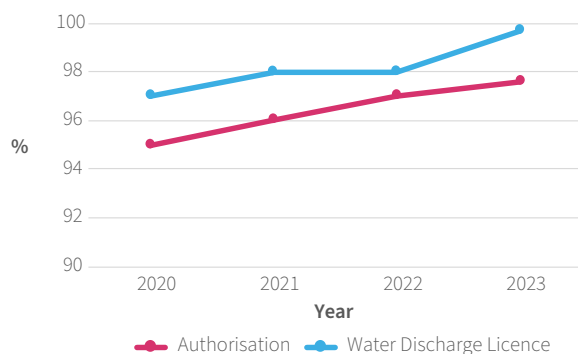
- ▶ The same numbers and types of freshwater animals living in the McArthur River system
- ▶ That the McArthur River system is in good condition
- ▶ An extremely low risk to human health from eating the monitored fish species caught in the McArthur River catchment upstream or immediately downstream of the mine
- ▶ That efforts made to mirror natural river channels have improved the habitat along the McArthur River diversion channel.

Mine Operator and Department scores comparison between 2020, 2021, 2022 and 2023

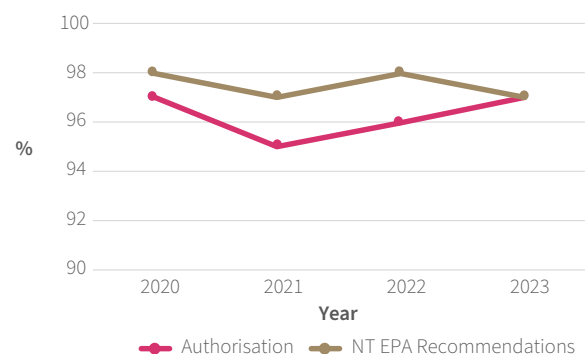
- ▶ The Mine Operator has increased its overall Mining Authorisation and Waste Discharge Licence compliance scores each year since 2020
- ▶ The Department has maintained a high level of overall compliance with the Authorisation and the NT EPA recommendations with minor variations in scores over the four years.

The graphs below illustrate compliance score trends in recent years.

The Mine Operator



The Department



Next audit

The next environmental performance audit review will start in early 2024 and will look at the period between 1 May 2023 and 30 April 2024.

The Independent Monitor will continue to talk to the local community about the findings of the 2023 audit report.

Conclusion

Health of the McArthur River

The Independent Monitor found that overall, the McArthur River system was still in good health and the fish were safe to eat.

Mine Operator: McArthur River Mining

- ▶ McArthur River Mining has continued to avoid or minimise potential environmental risks by proactively managing and monitoring environmental issues across a wide range of site activities while keeping a focus on continually improving its environmental performance
- ▶ McArthur River Mining scored a high level of overall compliance with the Mining Authorisation conditions and the Waste Discharge Licence conditions. Scores were higher than those achieved in 2022
- ▶ The review did not identify any environmental issues requiring urgent investigation
- ▶ McArthur River Mining's compliance score across all areas of the mine's operations showed that they did well at following the government's rules
- ▶ The Independent Tailings Review Board could be more consistent in its role to advise on the operation of the Tailings Storage Facility and any modifications to its design
- ▶ The Independent Certifying Engineer should provide certification that the works meet design specifications, approve recommencement of works at hold points and prepare regular progress reports.



The Department: The NT Department of Industry, Tourism and Trade

- ▶ The Department scored a high level of overall compliance with the Mining Authorisation conditions and the NT EPA recommendations
- ▶ The Department had a strong focus on key potential environmental risks, and a practical approach to regulating mining
- ▶ McArthur River Mining's good performance and high level of compliance have been supported by the actions of the Department
- ▶ It was found that the Department could simplify some of their processes to improve efficiencies
- ▶ Progress was made by the Department in forming a Community Reference Group, with the Minister appointing an Independent Chairperson in March 2023.



Acknowledgement of Country

Advisian Pty Ltd respectfully acknowledges the Traditional Owners of the Borroloola and Gulf region, and their continuing culture and connection to the lands and waters. We pay our respect to their Elders, past and present.

More information

If you would like more information about the Independent Monitor or to access the full Annual Environmental Performance Audit Report please visit the DITT Independent Monitor website at: www.industry.nt.gov.au/MRM-Independent-Monitor.

Acknowledgements: This document was produced by Advisian Pty Ltd.

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